



Constraints to Resource-Efficient Business Models and Practices

SUMMARY OF KEY POINTS

- Understanding the complex and intertwined nature of barriers for companies in improving their resource efficiency is a prerequisite of effective policy making.
- Companies do not use their resources inefficiently *per se*, but use them in a manner suited to the framework set by the 'web of constraints'.
- Literature provides evidence about successful systemic transitions, but does not assess failed instances and the reasons for them.
- The complexity of business model changes, particularly for smaller companies, may be a hurdle to full diffusion of the potential benefits of resource efficiency policy measures.

The POLFREE (POLicy options For a Resource-Efficient Economy) project explored drivers and barriers for a resource-efficient economy in Europe. The project investigated why resources have been used inefficiently, developed new concepts and paradigms for resources efficiency, and examined through modeling different policy scenarios for resource efficiency. This Policy Brief belongs to a series of five, listed below. These, and all other project outputs, may be found at www.polfree.eu

POLICY BRIEF SERIES

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POLFREE is a project funded under the European Union Seventh Framework Programme.

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Businesses play a dominant role in the use of resources. In recognition of this, the POLFREE project assessed the barriers to improving the efficiency of their use that companies experience. In addition, the project analysed over 200 case studies of changes to existing business models that were adopted by companies that led to an increase in resource efficiency, in order to determine what the key drivers of such change were. This policy brief summarises the findings of these assessments, and draws some overarching policy-relevant conclusions.

In order to undertake this assessment, a framework for the classification of barriers to improving resource efficiency was established, as illustrated in Table 1.

Barrier Type	Definition	Examples
Institutional	Barriers caused by political institutions	Regulations and laws
Market	Market conditions, economic climate, value network conditions	Monopolies, lack of information, subsidies, supplier leverage, etc.
Organisational	Firms as social systems influenced by goals, routines, organisational structures, etc.	Company strategy or focus, lack of funds, lack of CSO, etc.
Behavioural	Individuals' values and attitudes within companies	Lack of attention, lack of perceived control, lack of information, etc.
Technological	Insufficient or too costly technology	Lacking equipment or other tools, undeveloped technology from the market, unable to support technology, etc.

Table 1: Classification of barriers to improving resource efficiency

Similarly, changes to business models identified by the case studies may be grouped into the following three categories:

1 Demand side measures

The provision of *green products or green services* concepts. A relatively small number of the case studies examined are associated with the *functional sales* concept, where the customer pays for the functionality or performance of the product instead of buying the product itself.

2 Supply chain measures

A large proportion of the case studies examined concerned the green supply chain management and *industrial symbiosis* concepts, which focusses on improving resource efficiency of the supply chain, in cooperation with partners or suppliers.

3 Lifecycle measures

The third dominant group of cases studies focussed on *cradle-to-cradle or take-back management* (also part of product-service systems) concepts, which concern the resource efficiency of the full product lifecycle, and ultimately aims to close the recycling (or reuse/refurbishment) loop. Such concepts involve business model changes on both the supply and demand side. It is important to note the interaction with the services categories, as some types of *green services* enable the implementation of potentially high-impact resource-efficient lifecycle measures.

Conclusion 1

Understanding the complex and intertwined nature of constraints for companies in improving their resource efficiency is a prerequisite for effective policy making

A broad array of dynamically linked barriers (a 'web of constraints' – see Policy Brief N.1) play a role in determining the status of resource efficiency and the ease of and the ability to improve the resource efficiency of a business at a single point, or over time. Companies do not use their resources inefficiently *per se*, but use them in a manner suited to the framework set by the web of constraints.

The job of designing an effective policy mix and strategy for improving the resource efficiency of businesses would be made easier if a priority list of constraints to tackle could be provided. However, in the case studies examined, no common dominant 'barrier' could be identified. This conclusion is of high relevance for designing effective policy mixes (see Policy Brief N.5). The literature reviews show that sectoral differences make prioritisation extremely complex. Whereas results from Eurobarometer indicate that uncertain demand (and thus uncertain return on investments) and existing regulations that do not provide enough incentives are a key constraint to investments in resource-efficient technologies, behaviours and business models on a macro level, results from the construction sector indicate that it is primarily entrenched culture, beliefs and routines that keep actors 'imprisoned' in the a resource-inefficient paradigm. Other studies hint at technological boundaries as the principal cause. In highly complex value chains, the highly intertwined production system plays an important organisational role as well.

Conclusion 2

The literature provides evidence about successful resource-efficient business models and practices, but does not assess failed instances and the reasons for them

The resource-efficient business models and practices examined in POLFREE and available in the literature were those that had been successful within the existing web of constraints, or had successfully overcome behavioural, organisational, technological or – in particular – market constraints (see Table 1). None of the examples found were made possible by removing institutional (e.g. legal and policy) constraints. Of course, this does not imply that the existing institutional framework does not hamper their proliferation. There is little examination in the literature of resource-efficient business models and practices that were introduced but had failed as a result of institutional constraints, and thus such an assessment is difficult to conduct. Literature studies may therefore suffer from bias, and deeper analyses and attempts to foster 'learning histories' are therefore highly useful.

Conclusion 3

The complexity of business model changes, particularly for smaller companies, may be a hurdle to full diffusion of the potential benefits of resource efficiency policy measures

Policy measures such as fiscal measures, work as a generic tool to promote demand side, lifecycle and supply chain business models. However, the financial stimulus may be rather small, and as exemplified by the web of constraints, changes are not only governed by financial incentives. Especially in smaller companies, limited capacity may act as a behavioural barrier to the adoption of complex resource-efficient business models and practices. Company management must have a clear view on the robust niche that can be captured by radically changing a business model, and the shifts in cultural and competence that are required. Direct policy measures may act as a necessary push in the right direction, but are certainly not the only factor. The consumer must also demand the product or service the new business model produces. The customer (be it a citizen or a business-to-business customer) has many factors guiding each decision, among which are perceived transaction costs ('do I want to bother changing behaviour in view of the limited impact on my life and budget?'), and a feeling of freedom and choice ('do I want to share and lease goods that I always want at my disposal?', 'Can I always count on the supply of residual, secondary material as a feedstock?'). Direct policy influence in the uptake of product-service systems may therefore be rather limited, if a more systemic approach to the web of constraints is not applied.

Further Reading

Ton Bastein, Wietske Koers, Koen Dittrich, Julianna Becker, Fernando J. Diaz Lopez (2014): *Business barriers to the uptake of resource efficiency measures*. Deliverable 1.5 POLFREE project

Fernando J. Diaz Lopez, Julianna Becker, Frank Berkers, Beste Eris, Wietske Koers, Hans van Vliet, Ton Bastein (2014): *New business models that support resource efficiency*. Deliverable 2.4 POLFREE project.



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This policy brief was prepared by Ton Bastein (TNO). The views expressed in this publication are those of the authors and do not necessarily reflect the opinion of the European Commission.



POLFREE

POLICY OPTIONS FOR A
RESOURCE EFFICIENT ECONOMY

POLFREE is a project funded
under the European Union
Seventh Framework Programme

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Funded by the European Union